

## CLAIMS

What is claimed is:

1. A method of forming a fingerprint-resistant anti-reflection coating for  
5 application onto a plastic substrate, comprising the steps of:

a) ion beam depositing a lower thin layer onto a plastic  
substrate, said lower layer having an optical path length equal to a half wave at a  
pre-selected design wavelength in the range of about 450 to 500 nanometers;  
and

10 b) ion beam depositing an upper thin film layer onto said lower  
thin film layer, an upper surface of said upper thin film layer to be exposed to an  
ambient environment, said lower layer having an index of refraction greater than  
an index of refraction of said upper layer, said index of refraction of the lower  
layer being at least 0.5 higher than the index of refraction of the upper layer, said  
15 upper layer having an optical path length equal to a quarter wave at a pre-  
selected design wavelength in the range of about 450 to 550 nanometers.

2. The method of Claim 1, wherein said step of depositing an upper  
layer comprises depositing an upper layer comprising  $\text{SiO}_2$ .

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3. The method of Claim 1, wherein said step of depositing an upper  
layer comprises depositing an upper layer comprising  $\text{Al}_2\text{O}_3$ .

4. The method of Claim 1, wherein said step of depositing a lower  
25 layer comprises depositing a lower layer comprising  $\text{TiO}_2$ .

5. The method of Claim 1, wherein said pre-selected design  
wavelength is 500 nanometers.

30 6. The method of Claim 1, wherein the index of refraction for the  
plastic substrate is 1.52 and the index of refraction for the lower layer is 2.7.

7. The method of Claim 1, wherein the index of refraction of the ambient environment is 1.0 and the index of refraction of said upper layer is 1.5.

8. The method of Claim 1, wherein said upper layer is  $\text{SiO}_2$ , the lower  
5 layer is  $\text{TiO}_2$  and the design wavelength is 500 nanometers.

9. The method of Claim 1, wherein said upper layer is  $\text{Al}_2\text{O}_3$ , the lower layer is  $\text{TiO}_2$  and the design wavelength is 500 nanometers.

10 10. A method of forming a fingerprint-resistant anti-reflection coating for plastic eyeglass lenses, comprising:

selecting a design wavelength;

ion depositing an upper thin film layer to be exposed to an ambient environment, said upper layer having an optical path length substantially equal to  
15 about a quarter wave at the selected design wavelength; and

ion depositing a lower thin film layer to interface the plastic eyeglass lenses, said lower layer having an index of refraction greater than an index of refraction of the upper layer, said index of refraction of the lower layer being at least about 0.5 higher than the index of refraction of the upper layer, said lower  
20 layer having an optical path length equal to a half wave at the selected design wavelength;

wherein the reflectance of light from said fingerprint-resistant anti-reflection coating when applied to plastic eyeglass lenses is substantially the same in oil and the ambient environment.

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11. The method of Claim 10, wherein ion depositing the upper layer includes depositing  $\text{SiO}_2$ .

12. The method of Claim 10, wherein ion depositing the upper layer  
30 comprises depositing  $\text{Al}_2\text{O}_3$ .

13. The method of Claim 10, wherein ion depositing the upper layer comprises depositing  $\text{TiO}_2$ .

14. The method of Claim 10, wherein selecting the design wavelength includes selecting a wavelength of about 450 to about 550 nanometers.

5 15. A method of forming a fingerprint-resistant anti-reflection structure, comprising:

a) selecting a polymer substrate;

10 b) ion depositing a lower thin film layer to interface the selected polymer substrate, the lower layer having an index of refraction greater than an index of refraction of the upper layer, the index of refraction of the lower layer being at least 0.5 higher than the index of refraction of the upper layer, the lower layer having an optical path length equal to about a half wave at the pre-selected design wavelength of about 450 to about 550 nanometers; and

15 c) ion depositing an upper thin film layer, to be exposed to an ambient environment, having an optical path length equal to about a quarter wave at a pre-selected design wavelength of about 450 to about 550 nanometers.

20 16. The method of Claim 15, wherein ion depositing the upper layer includes depositing at least one of  $\text{SiO}_2$ ,  $\text{Al}_2\text{O}_3$ , and combinations thereof.

17. The method of Claim 15, wherein ion depositing the lower layer includes depositing  $\text{TiO}_2$ .

25 18. The method of Claim 15, wherein the pre-selected design wavelength is about 500 nanometers.

30 19. The method of Claim 15, wherein the index of refraction for the plastic substrate is about 1.52 and the index of refraction for the lower layer is about 2.7.

20. The method of Claim 15, wherein the index of refraction of the ambient environment is about 1.0 and the index of refraction of the upper layer is about 1.5.

5 21. The method of Claim 15, wherein ion depositing the upper layer includes depositing  $\text{SiO}_2$ , ion depositing the lower layer includes depositing  $\text{TiO}_2$ , and the preselected design wavelength is about 500 nanometers.

10 22. The method of Claim 15, wherein ion depositing the upper layer includes depositing  $\text{Al}_2\text{O}_3$ , ion depositing the lower layer includes depositing  $\text{TiO}_2$ , and the preselected design wavelength is about 500 nanometers.